Interface

A CRAY RESEARCH, INC. PUBLICATION

DECEMBER/JANUARY 1987

D.C.
D.K.
R.E.
G.K.

Kathy Reed from Cray's inventory group in Chippewa Falls works closely with people from the Chippewa County Development Center to meet the company's requirement for 99.5 percent accuracy on completed connectors.

Helping others help themselves

This past fall, Cray Research received the first place Employer of the Year Business/Industry award from the Association for Retarded Citizens. Having already received the first place award from the state of Wisconsin, Cray Research was then nominated on a national level. The company was selected from thousands of nominations and was recognized for its outstanding work with the Chippewa County Development Center (CCDC) in Chippewa Falls, Wisconsin.

Karen Anderson, human resources manager, and Kathy Reed, a receiving inspector who put in many hours training the people at CCDC, represented Cray Research at the award reception in Omaha, Nebraska.

CCDC is a facility that provides work-training programs for developmentally disabled and mentally ill adults in Chippewa County. Currently, 85 people are enrolled in the program. Through subcontracts, Cray Research helps provide jobs and competitive salaries for these people. Last year alone, the workers at CCDC earned over $104,000. "We operate on the principle of normalization," explains Stephanie Peloquin, director of CCDC. "It is part of a normal lifestyle for a person to get up and go to work — not to hook rugs all day long. Cray Research has given many people the opportunity to enjoy a normal, unrestrictive lifestyle."

"I want to thank everyone from Cray Research for the outstanding working relationship we have together," Stephanie continues on behalf of the people at CCDC. "Because of (Cray Research), a few more people have learned that the only limits that exist are the ones we place on ourselves."

Starting with 14 people and a goal of 25 connectors a month, employees of the Chippewa County Development Center have proved their value to Cray Research. Today, the Center's 87 employees provide Cray Research with 2,000 connectors a month.

Stephanie Peloquin talks about the efforts of the people at Cray Research and CCDC who worked together and experienced outstanding success...

"Without Cray Research, the developmentally disabled workers at CCDC would not have the opportunity to do a job that provides meaningful work and allows them to be people first and disabled second.

Without Cray, they would not know the dignity, happiness, and feelings from a job well done.

Without Cray, they would not know the feeling of being genuinely appreciated by an employer.

Without Cray, they would not have developed a pride in their work and a feeling of self-worth.

Without Cray, they would not be regularly contributing to their cost of living.

Without Cray, they would not have earned over $100,000 last year.

Without Cray, they would not be making the most of their potential.

For all of these and many more, we thank you very much."

1986 Performance Objectives

Finance and Administration

Actual financial results will not be available until the end of January; the following progress reports on financial objectives are based on projections.

Goal: Generate operating income equivalent to 30 percent of revenue and achieve return on stockholders' average equity of at least 20 percent.
Progress: The year-end forecast is for operating income to exceed the 30 percent target, and return on stockholders' average equity to exceed the 20 percent target.

Goal: Establish effective corporate systems and controls resulting in no material internal control deficiencies being included in management letter to Audit Committee by external auditors.
Progress: There were no internal control deficiencies noted in the March 3, 1986 management letter issued by Peat, Marwick, Mitchell & Co. to Cray's Board of Directors.

Goal: Manage cash balances so that sufficient borrowing facilities are competitively maintained and excess cash balances are invested within the Board of Directors guidelines.
Progress: Cray's financial team has maintained approximately $250 million of investments in accordance with the investment policy established by the Board of Directors. Additionally, the company successfully negotiated a $50 million revolving line of credit and completed a $115 million convertible subordinated debenture offering during the first quarter of 1986.

Goal: Assist customers in obtaining competitive financing for the purchase of Cray systems resulting in no lost customers solely because financing cannot be found.
Progress: By year-end, the company completed more than $200 million of end-user financing. No customers have been lost solely because financing could not be found.

Goal: Address recruitment challenges of the company, and provide new program design and support for management and employee development.
Progress: Total employment increased to approximately 4,023 at the end of 1986 from 3,180 at the end of 1985. Recruitment challenges have been addressed by defining a set of standard hiring practices, revising the company's relocation program, and developing plans that enhance the college relations program.

In addition to offering new courses in both employee and management development, a comprehensive training calendar and an employee orientation videotape were produced and distributed.

Marketing

Goal: Obtain 40 contracts.
Progress: As of December 31, 46 contracts were signed.

Goal: Install 41 new machines at customer sites.
Progress: 45 Cray systems were accepted as of December 31, 1986. These contracts represent two new application industries: Apple Computers in the computer systems segment of the electronics industry and General Electric Aircraft Engine Business Group (GE AEBG) in the engine segment of the aerospace industry.

Goal: Develop and implement a program to ensure customer satifaction with Cray Research products and services.
Progress: Bruce Kasson was assigned to lead this program. A customer satisfaction survey has been completed, and programs have been designed to address areas requiring improvement.

Goal: Develop and implement a plan to open new geographies.
Progress: Barry Utting was appointed General Manager of the Far East with its base of operation in Hong Kong. He is responsible for Australia, Korea, Taiwan, People's Republic of China, Malasia, Singapore, and Hong Kong. Japan remains a separate entity. Other new geographies are being evaluated.

Goal: Develop comprehensive product requirement document (PRD) for software.
Progress: The PRD was completed in May and submitted to Software Development in June. The PRD describes marketing software needs for the next three years and prioritizes the projects.

Software and Hardware Development

Goal: Improve Cray Research software and hardware reliability.
Progress: Software mean time to interrupt (MTTI) has more than doubled since January 1986, and hardware reliability continues to improve.

Goal: Develop and prepare personnel to meet the technical and administrative needs of the company.
Progress: Several programs are in place to develop the skills of

Cray people for current and future needs. The addition of the UNITE program in January of 1987 will help fill the needs of people in Chippewa Falls. Also, staffing of key technical positions in software, engineering, development, and manufacturing was completed in 1986.

Goal: Produce compilers and operating systems for the CRAY-2, CRAY X-MP, and CRAY X-MP follow-on products.
Progress: The releases of CFT Version 2, CFT77, CFT 1.14, CFT 1.15, COS 1.14, COS 1.15, and UNICOS are improving software support for Cray products.

Goal: Continue the disk development program and enhance the reliability of the existing disk product.
Progress: Follow-on disk development projects are proceeding on schedule. Software reliability of current disk products is excellent. Efforts to enhance both software and hardware reliability will continue in 1987.

Goal: Provide hardware and software support for the CRAY X-MP follow-on systems.
Progress: Hardware design and development are the pacing items for follow-on projects, which will continue in 1987. Engineering, software, and manufacturing support teams are ready.

Goal: Continue to develop IC capability to support new products.
Progress: Significant progress was made in establishing a silicon VLSI front-end capability. Efforts to develop capabilities with GaAs are proceeding at a slower rate. Both projects will continue in 1987.

Manufacturing

Goal: Improve overall system reliability.

Progress: Reliability for all systems has improved by approximately ten percent, and 1986 shipped systems have improved by nearly 15 percent. Disk reliability needs further improvement.

Goal: Improve employee training and motivation programs.
Progress: Employee video training has expanded, and general meetings with all manufacturing personnel were successful. Monthly supervisory meetings are continuing, and all departments are having periodic meetings.

Goal: Ship new systems to meet delivery allocation schedule.
Progress: 40 new systems were shipped by December 31, 1986. This is above the original 32 new systems scheduled and below the revised goal of 41. All systems required to meet financial objectives were shipped. Note that targeted numbers for shipments and installations can differ from systems shipped because December shipments usually are counted in January installations.

Goal: Control stockroom inventory and work in-process.
Progress: Control of this asset is good. Present inventory is within one percent of the original goal.

Goal: Complete transition from Qantel to Honeywell computer system for Chippewa Falls.
Progress: A number of key programs are running on the Honeywell system, and the transition is nearly completed.

New Product Development

Goal: Ensure a stable IC prototyping process for CRAY X-MP follow-on systems, including CAD option

development, mask-making, fabrication, packaging, and final test.
Progress: Mask-making software and IC design rule checkers are in production, and an improved fault simulator is being tested. Optimization has taken place for mask-making and interactive drawing packages. The IC fabrication and packaging groups have completed the characterization of processes to maximize yields. During 1986, IC processing and packaging groups developed approximately 75 new options, prototyped 50 options, processed over 1,300 wafers yielding over 20,000 die, and packaged in excess of 12,000 die.

Goal: Develop IC front-end process for IC devices from bare wafer up as a learning vehicle for next-generation devices.
Progress: A general agreement for process technology has been completed, and transfer of technology has been initiated. Equipment has been characterized, and processes have been developed for demonstrating and evaluating structure elements. Major software packages have been installed for device and process development and modeling.

Goal: Complete initial definition of architecture concept, devices, hardware design rules, module/system packaging and cooling concepts for follow-on systems.
Progress: Initial definition of system architecture has been completed. New high-speed device wafers have been fabricated and are being tested for functionality and speed. Early testing of logic chips was complete by year-end, and wafer probing equipment was in place. An initial optical connector assembly is progressing, and several process steps for high-speed

module substrates were demonstrated. Die bonding has been successfully illustrated, and thermal and cooling tests of system packaging were accomplished by year-end.

Goal: Initiate a memory design project to develop the memory devices required for follow-on systems.

Progress: Personnel, associated tools, and equipment are in place. An initial design was complete by year-end, and a second project has been defined and is progressing.

Goal: Establish an initial base for future software products, including operating system, compiler, utilities, and libraries; demonstrate on CRAY X-MP and CRAY X-MP follow-on machines for multiprogramming, multiprocessing, multitasking, and microtasking performance under FORTRAN/UNIX user environment.

Progress: An initial software base has been established and demonstrated. This base includes a multiuser, multithreaded UNIX System V Release 2 operating system, utilities, libraries and compiler. Additional software support includes a C compiler and networking and interfacing support. Application techniques are being evaluated.

1987 Performance Objectives

Finance and Administration

- Generate operating income equivalent to 30 percent of revenue and achieve return of stockholders' average equity of at least 20 percent.
- Establish and maintain effective corporate systems and controls resulting in no material internal control deficiencies being included in management letter to Audit Committee by external auditors.
- Manage cash balances so that sufficient borrowing facilities are competitively maintained and excess cash balances are invested within the Board of Directors' guidelines.
- Develop policy and supporting programs involving workforce management.

Marketing

- Obtain 50 contracts.
- Install 53 machines at customer sites.
- Develop and implement country plans for all main subsidiaries.
- Develop ADA and LISP.
- Ensure technical excellence in the field operations.

Software and Hardware Development

- Continue CFT77, CFT Version 2 and UNICOS development to provide reliable and high performance compilers and operating systems for Cray Research systems.
- Continue to support, enhance, and improve the reliability of COS and CFT to provide a reliable and high performance operating system and compiler for the CRAY X-MP and CRAY X-MP follow-on systems.
- Ensure baseline CTSS support for Cray Research products.
- Complete design, checkout, and integration into manufacturing for CRAY X-MP follow-on system.
- Continue disk development programs to improve reliability, performance, and cost.
- Continue engineering enhancements on the CRAY X-MP and CRAY-2 systems to improve performance, reliability, and cost.

Manufacturing

- Effectively manage our people in a changing environment.
- Complete production plans for the CRAY X-MP follow-on system.
- Ship all scheduled systems on time.
- Continue to improve the quality and reliability of new systems.

- Develop new processes, and integrate automation in Cray Research manufacturing.
- Begin production of system enhancements for current products.

New Product Development

- Finalize system definition with availability of full set of system design rules. Initiate system design.
- Stabilize UNIX System V Release 3 with graphic and peripheral support. Extend product support under parallel environment for FORTRAN programming and application libraries.
- Establish final process for module substrate and die/module packaging/cooling techniques for new devices.
- Establish Cray laser/detector process and demonstrate circuits using this technology.
- Provide first silicon of Cray designed high-speed memory chip.
- Establish Cray metallization process for new gate devices. Complete design and fabrication of circuits. Provide operational CAD software for both automatic routing and design rule verification.
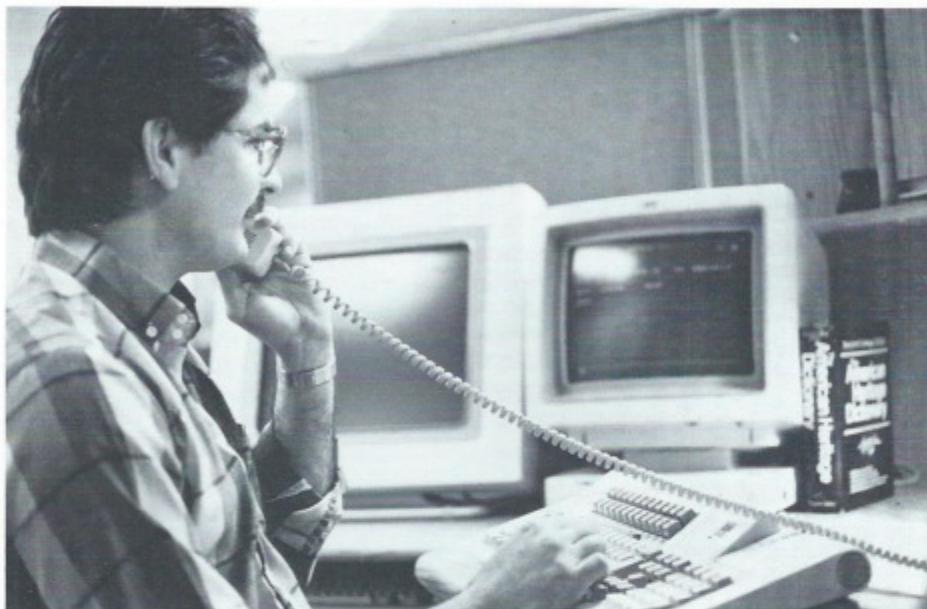
With the CRAY-2 system, a personal computer and front-end system are used to load the UNICOS operating system.

UNICOS: the choice and the challenges

There are two good reasons for change: either it is advantageous, or there is no choice. Cray customers make changes in their computing environment when new software or hardware improves their capabilities — that is, when change is advantageous. In March of 1986, when the UNICOS operating system was first introduced, the advantages started to emerge.

UNICOS opens the door to new capabilities for Cray customers. Among the benefits are increased portability, networking, performance, and features.

By 1988 the company expects to have equivalent functionality between COS and UNICOS. Already, UNICOS outperforms COS in several key areas such as SSD and Input/Output rates. In terms of applications, an increasing number of important applications for early customers were functional and supported by the end of 1986. Many other applications are in progress or in planning stages.

A little history

The first Cray systems were built with one central processing unit (CPU) and a maximum of one-million words of memory. This is the product for which COS was developed. Today, the company offers products that have one, two, or four CPUs and from one to 256 million words of memory.

Because technology changes so quickly, Cray Research sought an operating system that could be moved rapidly from one architecture to another. This is what is known as portability. Such an operating system also needed to be powerful enough to fully exploit the capabilities of Cray computers. Studies concluded that the UNIX operating system was both portable and powerful enough to fulfill this need. In addition, a modular design increases the reliability of the UNIX operating system. To provide these advantages, Cray Research designed UNICOS, which is derived from the AT&T UNIX System V operating system.

Why change?

As Gayle Smith, manager of CRAY-1 and CRAY X-MP system software explains, there are many reasons Cray Research put UNICOS on both CRAY X-MP and CRAY-2 systems. "Customers who are running COS on their CRAY X-MP system will be needing more powerful systems," she says. "Many of these customers will be upgrading to new generations of Cray computers. With UNICOS on the CRAY X-MP system, we can help customers migrate their software before they get new hardware. They won't have to change their hardware and software at the same time."

Operating systems based on UNIX are becoming more popular in the scientific and engineering communities. As Gayle Smith notes: "Scientists and engineers who are buying Cray computers already have a football field of computer systems. They are not interested in learning 73 different operating systems; they want the output of their research. Because the UNIX operating system is so widely used, scientists and engineers using UNICOS will be able to keep many of the same commands across several systems. This will provide a tremendous advantage in the future."

Another benefit of UNICOS is its increased ability to fit into existing environments. This is known as connectivity. Because of the TCP/IP protocol, which is an agreed upon way of communicating between computer systems, UNICOS offers increased connectivity and functionality.

"This protocol is a new dimension and provides more options for networking Cray systems," explains Dave Sadler, manager of network communication software in Mendota Heights. "The use of TCP/IP allows Cray systems to

become equal partners in a network of heterogeneous systems that might include products from Digital Equipment, Pyramid Technology, Sun Microsystems, and many other vendors.''

Another important feature that attracts customers to UNICOS is the increased capability for parallel processing at the operating system level, something that is not possible with other operating systems running on Cray mainframes. Still other advantages include interactive capabilities and data security features, which are not provided with COS.

These and many other capabilities are possible with the UNICOS operating system. Today the challenges are to help customers and site representatives understand these capabilities, assist them in identifying the best software for their needs, and provide support for those customers who decide to migrate their software to take advantages of the new capabilities.

Whether it's helping customers identify needs, building functionality into Cray's software offerings, or teaching others about our products, everyone at Cray can make a contribution. People throughout the company play a key role in the success of our new products by understanding the choices and the challenges.


Loading UNICOS on the CRAY X-MP system is done by inserting a cartridge into a disk-like mechanism called an expander. Once the cartridge is loaded, it is possible to bring up source code, the UNICOS kernel, and access libraries.

Dependent care is getting cheaper

Beginning April 1, 1987, Cray's working parents will be able to ease the expense of caring for their dependents while they're away at work.

Cray Research is introducing a Dependent Care Expense Account (DCEA) — a pretax account that eligible employees can use to pay for dependent care expenses while they work. DCEA is similar to the Health Care Expense Account. After they've been paid for, eligible expenses are submitted to Prudential for reimbursement from the DCEA. Assuming that the balance in the account will cover the submitted expenses, Prudential will issue a check to the employee for the dependent care expense. Checks can be issued as often as every two weeks for as little as $45.

In most cases, $5,000 can be contributed to the DCEA each year. If you are married and filing a single tax return, the limit is $2,500. These restrictions are
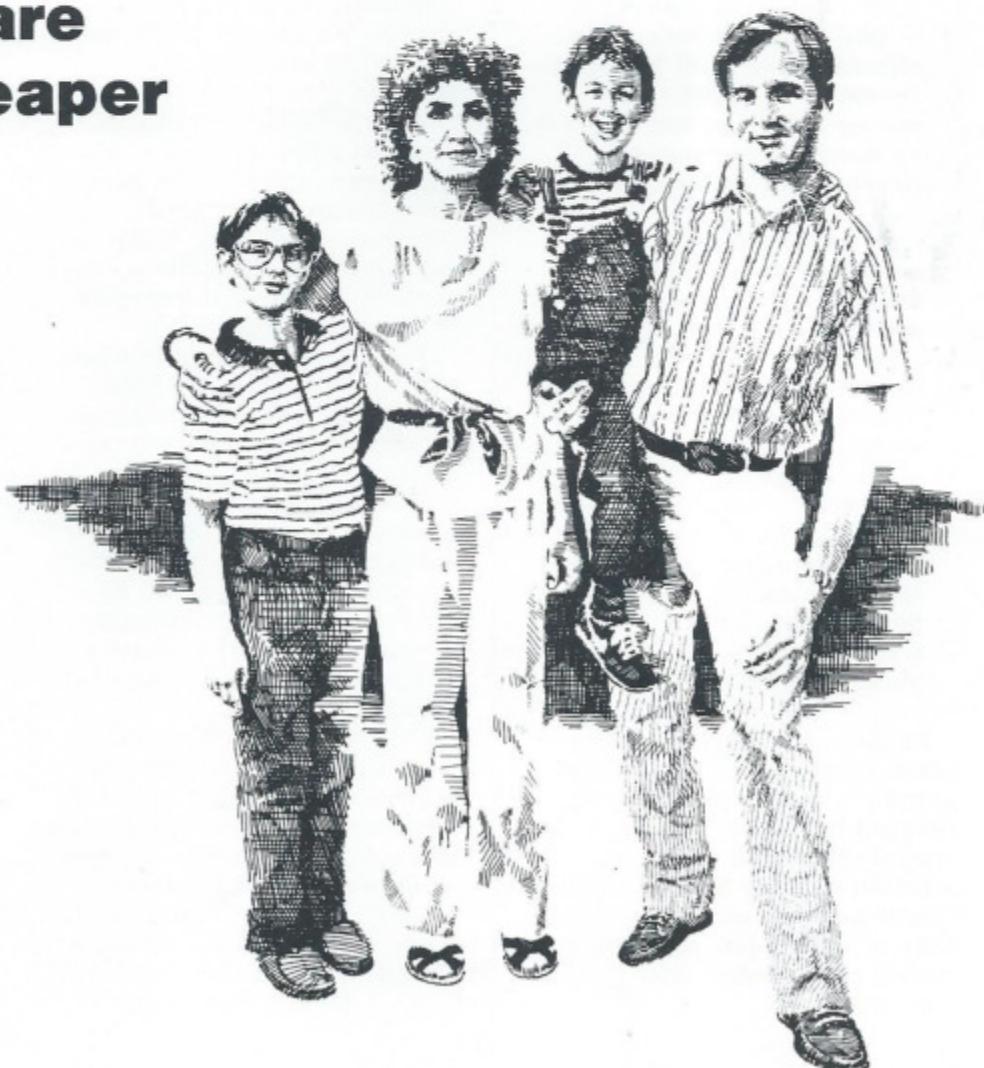
imposed by the recently passed Tax Reform Act.

An important consideration for employees participating in this plan is whether the Federal Credit for Child and Dependent Care or the DCEA is better financially. The reason for this is that eligible dependent care expenses cannot be reimbursed through the DCEA and also be used for tax credit. The federal program allows people to take a tax credit up to $2,400 for one dependent and up to $4,800 for two or more dependents — subject to certain restrictions. Other facts to know about the DCEA are:

- The DCEA may also be used for dependents of any age who are mentally or physically unable to care for themselves and are household members.

- In 1987, DCEA enrollment is effective from April 1 through December 31. After this, employees will be asked to sign up during open enrollment in November of each year.

- Care must be taken to contribute an appropriate amount, because unused account balances are forfeited at year-end. However, employees do have until March 31 to submit expenses incurred during the prior year.

- Contribution amounts may only be changed if a change in family status occurs. A change would be marriage, divorce, birth or adoption of a child, or a spouse's employment (if previously unemployed).

Employees will find out more about this Cray benefit later this month. A memo containing detailed information and a worksheet to help determine whether the DCEA or the Federal Credit for Child and Dependent Care is more appropriate will be mailed to all eligible employees in January.

Compensation based on merit

Each fall, a team of human resources representatives in the compensation area looks at Cray's U.S. salary program. The team researches the salary programs of other U.S. companies, evaluates how Cray's salaries compare with those of other companies, and decides what Cray Research must do to keep its salaries competitive within the U.S. market. Based on this information, a recommendation is made for the coming year for the U.S. merit increase program. Cray's international subsidiaries use their local markets and economic conditions to determine their salary programs.

Merit increases are salary changes that reflect performance on current jobs. They are different from *promotional* increases, which are changes based on moving into new jobs with more responsibility. Merit increases also differ from *adjustment* increases, which are given for special situations when merit or promotional increases would not be appropriate.

Over the past few years, the compensation team has found total merit increase percentages steadily declining for companies within the computer industry. In 1985 and 1986, companies within the industry granted merit increases at the rate of approximately eight percent and six percent respectively. Industry projections for 1987 indicate a merit increase rate of about five percent.

While Cray has followed this downward trend, its rates are higher. In 1986, Cray's total U.S. salaries were targeted to increase by about eight percent as a result of all merits given between January 1 and December 31; the actual rate turned out to be just slightly lower than that. For 1987, Cray's total U.S. salaries are targeted to rise by six percent due to merit increases.

"This does not mean that all people will receive increases equal to the overall target," emphasizes Karen Clary, human resources manager. "At Cray Research, a person's actual merit increase is always based on a unique set of circumstances. These include individual performance and contributions, the individual's salary in relation to the job's salary range, and department and division budgets. Even with six percent as guidance, it is up to individual managers and divisions to use discretion in allocating funds.

"It may mean that a person who demonstrates outstanding performance, and whose current salary is low in the salary range, will receive an increase greater than six percent," Karen continues. "At the same time, someone who is meeting standards, and whose salary is high in the salary range, might receive a merit increase lower than six percent. Finally, someone who is performing below standard might not receive any increase. This is a decision that is made by division management. Employees are encouraged to talk with their managers about actual job performance and individual salary increases."

Baby Crays hit home

With the sale of the first CRAY-1 system to Los Alamos National Laboratories ten years ago, Cray Research ignited a spark that has since exploded into a fiery marketplace. Companies around the world are clamoring to get a piece of the super-computer pie, and in doing so, are stretching the boundaries of the marketplace to include systems in all size ranges.

Although Cray Research holds the leadership position in the industry, every competitor affects our sales potential. What follows is an interview with John Rollwagen, stating the company's attitude toward the emerging group of companies that are offering so-called "near-supercomputers" to the market. John hopes that this statement will be used as a basic reference for inquiries on the subject — inquiries that can and have come from within Cray Research, from customers, from media, from investors, and from these other computer companies.*

Interface: Lately, near-supercomputers have been drawing more attention from the marketplace. Competitors are claiming that they have some kind of licensing agreement with Cray. What kind of relationship do we have with near-supercomputer manufacturers?
John: There are two situations where we have accommodated specific requests from near-supercomputer manufacturers. First, COS and CFT Release 1.13 was put in the public domain so that vendors could have access to the code without us having to provide licensing agreements or support for the software. And second, we have signed a routine patent cross-licensing agreement with Convex Computer Corp. This was done in the interest of pro-tecting our intellectual property and preserving our design freedom. The agreement applies only to existing hardware patents. It does not apply to software or to future hardware patents.

Interface: Do we want to offer these companies our time and resources?
John: Cray Research has no desire to support or cooperate with any of these companies, and we do not like statements or suggestions that we do. Any agreements that we have or might enter into with any of these companies are intended to protect interests. Our preference is to keep such agreements to a minimum, in line with the feeling that the last thing we want to give these companies — either directly or indirectly — is our time. We simply do not want to be diverted from our purpose.

Interface: In the short run, what effect will near-supercomputers have on our position in the industry? What about in the long run?

John: There is a short-term view based on the very strong feeling that the efforts of these companies are doing little to benefit us today, and they are in fact making some of our jobs more difficult. While they do not offer products that compete head-to-head with ours, they are nonetheless competitors. They compete for our customers attention and financial resources; and they compete with us for human resources. They also consume our time with requests for information and other help and by creating questions in the minds of people important to us that then require our response.

The long-term view, however, is positive. It is based on the assumption that the efforts of these companies will accelerate the acceptance of computer-generated simulations in science, engineering, and design. The number of knowledgeable users and applications will grow, and demand for our kind of computer systems will increase accordingly. We think this is a highly probable outcome, and one that under-scores the need for us to tend to our knitting — that is, do everything we know how to maintain our performance leadership position.

In 1986, for example, we introduced two new models of our CRAY X-MP product line and new Solid-state Storage Devices. Cray's commitment to R&D is one method of ensuring our leadership and differentiating our products from those of other manufacturers.

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*Any further inquiries from or regarding these companies should be directed to the following people.
Describing or exploring relationships: Bruce Kasson
General information: Bob Gaertner
Cray product information: Dick Morris

News Briefs

CRAY X-MP system ordered by CERN

On November 5, Cray Research announced that CERN, a European laboratory for particle physics, has ordered a CRAY X-MP/48 supercomputer with Solid-state Storage Device (SSD) valued at approximately $18 million. The leased system will be installed in the fourth quarter of 1987 at the CERN computing center in Geneva, Switzerland, pending export license approval.

Fourteen European countries are members of CERN and finance its operations. The Cray system will be used specifically to analyze massive amounts of data involved in particle physics research.

German research laboratory orders computer

Cray Research announced on November 13 that Kernforschungsanlage Julich (KFA), a German national research laboratory, has ordered a CRAY X-MP/48 computer system valued at approximately $17 million. The system will be installed in the first quarter of 1987 at KFA's computer facility in Julich, West Germany, pending export license approval.

KFA, West Germany's largest scientific research laboratory, installed a CRAY X-MP/22 computer system in 1983. The new Cray system will augment KFA's existing computer systems and will be used for basic scientific research including solid-state physics, computer science, and high-energy physics.

French aerospace institute orders system

On December 2, Cray Research announced that the Office National d'Etudes et de Recherches Aerospatiales (ONERA) has ordered a CRAY X-MP/18 supercomputer valued at approximately $7.6 million. The system will be installed at ONERA's computer facility in Chatillon, France, in the second quarter of 1987, pending export license approval.

The CRAY X-MP/18 system will replace a CRAY-1 S/2000 computer system in operation since 1984. The mission of ONERA is to develop, direct, and coordinate aerospace research in cooperation with other French scientific and technical research organizations.

System sold to U.S. Department of Energy, Richland Operations

Cray Research announced December 2 that the U.S. Department of Energy, Richland Operations, ordered a CRAY X-MP/12 computer system valued at approximately $5.5 million. The purchased system will be installed in the first quarter of 1987 in Richland, Washington.

"The new supercomputer represents a key strategic resource for the Hanford nuclear research and development site," said Mike Lawrence, manager of the Department of Energy's Richland Operations office. "It will also add to our ability to compete for future programs in energy and general sciences." The supercomputer will be used for reactor safety and analysis, geological and groundwater studies, advanced reactor design, and radiography, physics, and chemistry studies.

Scientific Computer Centers installs system

On December 2, Cray Research announced that the Scientific Computer Centers (SCC) recently installed a CRAY-1/M computer system valued at $4.1 million. The system, which was purchased, was installed at SCC's computer facilities in Houston, Texas. SCC is a bureau providing supercomputer services to the scientific and engineering world. The Cray system will be used specifically for petroleum, aerospace, bio-technology, advanced graphics, and electronics research.

Government products division orders supercomputer

On December 5, Cray Research announced that Pratt & Whitney Government Products, a division of United Technologies Corporation, has ordered a CRAY X-MP/28 computer system with Solid-state Storage Device valued at approximately $12.5 million. The purchased system will be installed in the first quarter of 1987 at Pratt & Whitney's facility in West Palm Beach, Florida.

The supercomputer will be used to support various jet engine design projects including the National Aerospace Plane (NASP) propulsion system.

Pratt & Whitney's Government Products Division manages the design, development, and production of military jet fighter, transport, rotorcraft, and space propulsion systems. All Pratt & Whitney military production engines are manufactured at plants in Connecticut, Maine, and Georgia.

Peugeot orders Cray system

On December 11, Cray Research announced that the French automotive group Peugeot S.A. has ordered a CRAY X-MP/14 computer system valued at approximately $6.6 million. The system will be installed in the first quarter of 1987 at the headquarters of Automobiles Citroen, a subsidiary of Peugeot.

The computer system will be used for vehicle research, development, and design, including structural analysis, combustion, acoustics, aerodynamics, and crash simulation.

Announcement of readership survey

With each new year comes new plans and projects. In an attempt to evaluate our objectives for *Interface* and to plan for future issues, we are conducting a readership survey in January. The purpose of this survey is to help us design an editorial schedule that will accurately reflect the needs and interests of our readers.

A short survey that takes less than five minutes to complete will be sent out to about 1200 Cray Research employees. The participants will be selected at random. These employees will be asked to evaluate and describe their feelings about the newsletter, and to give opinions about the kind of articles they already enjoy or would like to read in *Interface*. The responses and resulting changes will be discussed in a future issue of *Interface*.

Keep your eyes open for a survey, and please respond as soon as possible. Your input is very valuable. If you are not selected to respond to the survey but would like to contribute your comments, please feel free to call or write Kate Neessen at ext. 165 in Minneapolis.

Remember changes in personal time plan

The June/July 1986 issue of *Interface* reported changes to Cray's personal time plan. Please remember, starting January 1, 1987, the following changes will be implemented. If you have questions regarding the new personal time plan, please contact your local human resources representative.

- Personal time accrual will be on a biweekly rather than monthly basis. New biweekly accrual rates are: 4.7 hours (122.2 hours/year) for up to five years of service; 6.3 (163.8 hours/year) for five to 15 years of service; 7.7 (200.2 hours/year) for 15 or more years of service. The category for 15 or more years of service is new.

- The maximum number of hours that can be accrued (earned, but not used) will be reduced to encourage employees to use their personal time. New maximum accruals are: 160 hours for up to five years of service; 240 hours for five to 15 years of service; and 320 hours for employees with 15 or more years of service.

For transition to the new plan, if the balance of your accrued hours as of December 31, 1986 exceeds the new maximum, you will be "grandfathered" at your December 31 level. This means

that you will be allowed to have a maximum accrual equal to your December 31, 1986 hours.

Also, to provide an annual cushion for planning use of personal time, employees will be able to accrue personal time beyond their maximum or "grandfathered" accrual limits from one employment anniversary to the next. However, accruals will be adjusted back down to the maximum limit (regular or "grandfathered") upon each succeeding anniversary date. For those who are "grandfathered", there are special rules concerning the annual adjustment, which occurs on your employment anniversary date. If you have questions about any of the special "grandfathering" provisions, contact your local human resources representative.

1987 Holiday Schedule

Thursday, January 1 —
New Year's Day
Friday, January 2 —
Cray Day
Monday, May 25 —
Memorial Day
Friday, July 3 —
Independence Day
Monday, September 7 —
Labor Day
Thursday, November 26 —
Thanksgiving Day
Friday, November 27 —
Day after Thanksgiving
Thursday, December 24 —
Christmas Eve Day
Friday, December 25 —
Christmas Day
Thursday, December 31 —
Cray Day

Affirming our progress, setting our goals

Martin Luther King. Sally Ride. Stevie Wonder. A black leader, a female astronaut, and a brilliant musician handicapped by blindness. What do they have in common? They all have made unique contributions to the world around them. Through their individual efforts, they have contributed to the diversity that helps make our world a better place.

At Cray Research, our success as a company is built upon many things: a solid R&D base, an outstanding track record of innovations, a strong financial foundation, sharp creativity, and integrity. All of these building blocks revolve around a single and powerful key — the diversity of our people.

Diversity is a concept that defines relationships within a company. It is a company quality that says that different people can work together and make individual contributions toward a common company goal. At Cray Research, much of our success depends on our diversity.

On a similiar yet much broader level, our nation also recognizes the value of a diverse environment. To support and strengthen the 1964 Civil Rights Act, President Johnson issued an executive order in 1965 that makes it a legal obligation for all government contractors to practice affirmative action. Many companies, however, recognizing the value of this kind of work environment, practice affirmative action on a voluntary basis. At Cray Research, our goal is to hire and promote people who welcome diversity.

Many companies have affirmative action plans that form a complete strategy for accomplishing formal requirements. At Cray Research, human resources representatives are available to administer the technical aspects of compliance, to assist employees, and to help develop strategies. Human resources representatives, however, only make suggestions — managers make decisions. Affirmative action is a shared responsibility.

A plan is only an outline for action — it does not behave or act. No matter how well written, a plan cannot guarantee that the guidelines will be followed. Only people — people who recognize the value of a diverse environment — can make those guidelines work. As Lis Wierum, human resources manager explains: "Affirmative action at Cray Research means that as a company, we will use positive results-oriented practices to ensure that women, minorities, handicapped persons, veterans, and other protected classes will be equally represented."

Our nation believes that the policies and actions of affirmative action flow from the belief that all people want to make a contribution, and that if they are provided with the proper environment, they will do so. In the same light, our company believes that diversity can create such an environment. So bringing a policy and an idea together, Cray Research has established a conscientious affirmative action program. Closely coupled with this plan is the tradition of treating each other with consideration and respect, and recognizing personal achievements.

In the words of the Cray Style: "because the individual is key at Cray, there is a real diversity in the view of what Cray Research really is. In fact, Cray Research is many things to many people. The consistency comes in providing those diverse people with the opportunity to fulfill themselves and experience achievement."

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